BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XB619

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Weapons Testing at Vandenberg Air Force Base, California

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorizations; request for comments on proposed authorizations and possible renewals.

SUMMARY: NMFS has received a request from the United States Department of the Air Force (DAF) for authorization to take marine mammals incidental to 2 years of activity related to testing of the Extended Range Cannon Artillery II (ERCA II) system at Vandenberg Air Force Base (VAFB), California. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two consecutive one-year incidental harassment authorizations (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal for each IHA that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision. The DAF's activities are considered military readiness activities pursuant to the MMPA, as amended by the National Defense Authorization Act for Fiscal Year 2004 (2004 NDAA).

DATES: Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Written comments should be submitted via email to *ITP.Pauline@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Robert Pauline, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical

region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed incidental harassment authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The 2004 NDAA (Pub. L. 108–136) removed the "small numbers" and "specified geographical region" limitations indicated above and amended the definition of "harassment" as applied to a "military readiness activity." The activity for which incidental take of marine mammals is being requested addressed here qualifies as a military readiness activity. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion

Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHAs qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On July 15, 2021, NMFS received a request from the DAF for two consecutive IHAs to take marine mammals incidental to ERCA II testing at VAFB, California. The application was deemed adequate and complete on November 19, 2021. The DAF's request is for take of California sea lions, Steller sea lions, harbor seals, and northern elephant seals by Level B harassment. Neither the DAF nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

The DAF is proposing to conduct test activities of the ERCA II system at VAFB over 2 years and requested the issuance of two consecutive one-year IHAs. The ERCA II system is a multi-element, multi-phase test program of the U.S. Army's (Army's) next-generation artillery systems. Major components of the artillery system include the cannon, gun mount, artillery projectile, and propelling charges. These components would be sited at the existing deactivated Launch Facility (LF)-05 site on VAFB. The proposed activities would include testing of ERCA II by firing non-explosive projectiles over the Pacific Ocean at distances ranging from the shoreline to approximately 1,180 miles (mi) (1,900 kilometers (km)) from the VAFB shoreline onto and beyond the Point Mugu Sea

Range (PMSR). A total of 77 projectiles are proposed to be fired over 51 test event days (39 events in year 1 and 12 events in year 2).

Dates and Duration

The DAF anticipates that testing will occur over 2 years. The first proposed IHA would be effective from October 1, 2023 to September 30, 2024, which would include 39 days of testing activities, and the second proposed IHA would be effective from October 1, 2024 to September 30, 2025, which would include 12 days of testing activities.

Geographic Region

VAFB occupies approximately 99,100 acres (400 square kilometers [km^2]) of central Santa Barbara County, California (Figure 1), approximately halfway between San Diego and San Francisco. The base includes 42 miles (mi.) (68 km) of coastline with a variety of natural communities, including beaches, coastal salt marshes, rocky intertidal, kelp forests, and hard and soft bottom substrates. ERCA II would be installed at LF-05 which is an existing deactivated launch facility located on the northern end of VAFB, 4.5 mi. (7.2 km) southeast of Point Sal. The site is located approximately 400 meters (m) from the cliffs, beach, and rocky shoreline. Test activities would require firing non-explosive projectiles over the Pacific Ocean with splash-down locations for the projectiles and components of the projectiles at distances ranging from the shoreline to approximately 1,180 mi (1,900 km) from the shoreline of VAFB, onto and beyond the PMSR. The PMSR is 36,000-square-miles (93,200 km^2) in size and is located adjacent to Los Angeles, Ventura, Santa Barbara, and San Luis Obispo Counties along the Pacific Coast of Southern California. PMSR includes controlled sea and associated airspace.

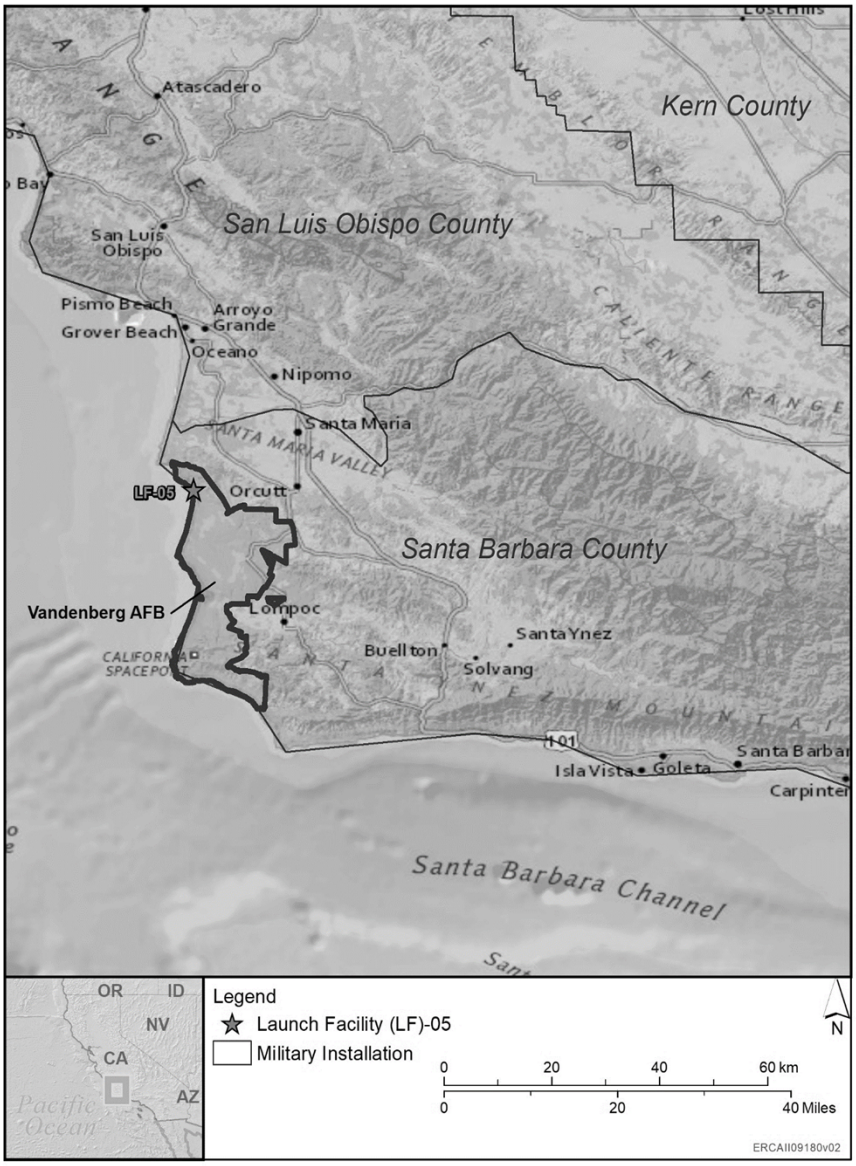

Figure 1. Vandenberg Air Force Base and Location of LF-05

Detailed Description of Specific Activity

ERCA II testing consists of 77 test events that would be conducted over 51 days within a 24-month period starting in the late calendar year 2023 and continuing into calendar year 2025 (Table 1). In addition to the projectiles, there are components of the projectiles that would land in the water at varying distances from LF-05. Three types of projectiles would be tested. The majority would be the Mass Simulant (Projectile A). Two other projectiles are the Terminal Flight Body Pre-Programmed Maneuver (PPM) Projectile (Projectile B) and the Boost Demo, Capture Demo, and Final Demo projectile

(Projectile C). Major components of the artillery system include the cannon, gun mount, artillery projectile, and propelling charges; these components would be sited at the existing deactivated LF-05 site on VAFB. The proposed activities would include testing ERCA II by firing non-explosive projectiles over the Pacific Ocean at distances ranging from the shoreline to approximately 1,180 mi (1,900 km) from the shoreline of VAFB onto and beyond the PMSR.

Table 1. **ERCA II Test Schedule**

Test Event	Test Schedule	Projectile Type	Number of Tests	Number of Test Event Days
Weapon Strength of Design	4QCY23 (4th Quarter, Calendar Year 2023)	A	35	30
Pre-Programmed Maneuver	2QCY24	A	3	3
		B	3	
Boost Demo	2QCY24	A	6	6
		C	6	
Capture Test	1QCY25	A	6	6
		C	6	
Final Demo	2QCY25	A	6	6
		C	6	
Total			77	51

There would be a total of 35 Weapons Strength of Design (WSD) test events over the course of 30 test days with a maximum of two to three mass simulant (Projectile A) test firings per day. There would be three PPM test days over a 2-week period. For each PPM test day, there would be one mass simulant (Projectile A) fired to confirm instrumentation is working and one PPM configuration (Projectile B) fired. Each of the Boost Demo, Capture Test, and Final Demo test events would involve 6 days of testing over a 2 week period. For each test day, there would be one mass simulant (Projectile A) fired to confirm instrumentation and one Boost Demo, Capture Test, or Final Demo configuration (Projectile C) fired.

In addition to the projectiles, there are components of the projectiles that would land in the water. With the exception of the WSD tests, all other tests include a "pusher plate" (having an approximate 12 inches [in.] diameter) that exits the muzzle along with the rest of the projectile and will splash down in the ocean. There is a chance that during PPM testing, sabot petals (5 in. x 5 in. x 45 in. and made of either aluminum or a carbon fiber composite) that fall from the projectile may fall into nearshore waters from the shoreline to approximately 1,150 feet (ft) (350 m) from shore.

Figure 1-2 through Figure 1-7 in the Navy's application (available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities*) show the potential impact or splash-down areas where the projectile and component parts for each test event are likely to fall. The potential splash-down area associated with Projectile A is mostly within 3 nautical miles (NM) from shore (Figure 1-2). During the PPM test (using Projectile B), the splash-down area is defined by the longer range and estimated dispersal area of the pusher plate, sabot petals, and the terminal flight body, which would splash down at different locations along the projectile flightpath (Figure 1-3, Figure 1-4, and Figure 1-5 in the application). For the Boost Demo, Capture Test, and Final Demo (using Projectile C), the potential splash-down area associated with the pusher plate is shown in Figure 1-7 in the application, and the potential splash-down area for all other component parts are shown in Figure 1-6 in the application.

Characteristics of the debris, such as the size, weight, and composition of materials associated with each test, will determine the potential for debris recovery. The three projectiles and their physical characteristics are provided in Table 1-1 in the application.

The weapon would fire all projectiles due west from the established gun position on the LF-05 site at VAFB (Figure 1-8 in the application). No nighttime tests would be

conducted. The flightpath of the projectiles would transit within a narrow corridor into the PMSR (approximately 3 NM from the VAFB shoreline), with impact sites ranging from 3 NM offshore through the extent of the PMSR and beyond (Figure 1-2, Figure 1-3, and Figure 1-6 in the application). However, only Projectile C, used in the Final Demo test, would impact beyond the PMSR, and of the six Final Demo tests, only two the projectiles would impact beyond the PMSR (Figure 1-6 in the application). The impact site would be monitored as part of the testing and include video impact scoring. Off-range DoD assets would participate in later scheduled test events and include the Pacific Tracker, RG-4 Global Hawks or MQ-9 Reapers, and Wave Gliders.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species)*.

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no serious injury or mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known,

that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. SARs (*e.g.*, Carretta *et al.,* 2021a). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2020 U.S. Pacific SARs (Carretta *et al.,* 2021a) and 2021 draft Pacific and Alaska SARs (Carretta *et al.,* 2021b, Muto *et al.,* 2021) available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports*.

Table 2. Marine Mammal Species Potentially Present in the Project Area that May be Affected by the Proposed Activities.

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	*Zalophus californianus*	U.S.	-, -, N	257,606 (n/a, 233,515, 2014)	14,011	>320
Steller sea lion	*Eumetopias jubatus*	Eastern U.S.	-, -, N	43,201 (43,201, 2017)	2,592	112
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina richardsi*	California	-, -, N	30,968 (N/A, 27,348, 2012)	1,641	43
Northern Elephant seal	*Mirounga angustirostris*	California Breeding	-, -, N	187,386 (N/A, 85,369, 2013)	5,122	13.7

[1] - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]- NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports* . CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

[3] - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range.

As indicated above, all four pinniped species (with four managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it. Additional pinniped species and numerous cetacean species are also known to inhabit the waters near VAFB. The

Guadalupe fur seal can be expected to occur in both deeper waters of the open ocean and coastal waters within the ERCA II Project Area. Satellite tracking data from Guadalupe fur seals tagged at Guadalupe Island have demonstrated movements into the offshore waters between 50 and 300 km from the U.S. West Coast (Norris *et al.* 2015; Norris 2017b, 2017a; Norris & Elorriaga-Verplancken 2020). Based on that data, the seals could occur in both deeper waters of the open ocean and coastal waters within the ERCA II Project Area. However, Guadalupe fur seals have not been observed at any VAFB haulout locations (U.S. Air Force 2020; Evans 2020) and are not expected to be within the area exposed to in-air noise levels that may cause behavioral affects. The northern fur seal could occur in the ERCA II Project Area. Migrating seals and those along the U.S. West Coast are typically found over the edge of the continental shelf and slope (Kenyon & Wilke 1953; Sterling & Ream 2004; Gentry 2009; Adams *et al.* 2014). Northern fur seals have not been observed at any VAFB haulout location (National Marine Fisheries Service 2020b) and also are not expected to be within the area exposed to in-air noise levels that may cause behavioral affects. Given this information take was not requested by the DAF and is not proposed by NMFS for Guadalupe fur seals and Northern fur seals and these species will not be discussed further.

The in-air noise created by the cannon firing and the supersonic flight of the projectile was analyzed by DAF for the potential transfer of sound energy through the air-water interface, resulting in underwater noise that could affect cetaceans in the Project Area. However, the potential for in-air noise to have any effect on at-sea marine mammals is extremely low. We have reviewed DAF's analysis and conclusions, and concur. Cetaceans spend their entire lives in the water and spend most of their time (>90 percent for most species) entirely submerged below the surface. When at the surface, cetacean bodies are almost entirely below the water's surface, with only the blowhole exposed to allow breathing. This minimizes in-air noise exposure, both natural and

anthropogenic, essentially 100 percent of the time, because their ears are nearly always below the water's surface. Furthermore, due to the elevation of the LF-05 site approximately 95 ft. above sea level and the firing angle of the cannon upward and away from the water, the majority of the overpressure from the cannon blast and the sonic boom generated by the projectile would strike the water's surface at angles greater than 14 degrees, and, therefore, the majority of in-air acoustic energy would not be transmitted underwater. Since the majority of the pressure generated by an in-air detonation is reflected at the water's surface and remains in the air, peak pressure levels from the cannon blast and sonic boom from the projectile measured underwater are not likely to result in sound levels that would exceed marine mammal harassment thresholds underwater in the ERCA II Project Area.

The DAF also analyzed the potential for a projectile or a component of a projectile to strike a marine mammal in one of the test-specific splash-down areas. The main variables used in the probability estimates include projectile and component dimensions, number of projectiles, size of the splash-down area, marine mammal presence and density within each splash-down area, season, and size (length and width) of representative adult marine mammals. The results of the probability calculations presented in Appendix A of the application show that, with a reasonably high degree of certainty due to the conservative assumptions made, marine mammals are highly unlikely to be struck by the projectiles or components from ERCA II testing. Given this information, the DAF and NMFS have determined that strikes from projectiles as well as underwater noise associated with cannon blasts and sonic booms would have a discountable effect on cetaceans in the ERCA II Project Area.

Biologically Important Areas (BIAs) include areas of known importance for reproduction, feeding, or migration, or areas where small and resident populations are known to occur (Van Parijs, 2015). An interactive map of the BIAs may be found

here: *https://cetsound.noaa.gov/biologically-important-area-map.* There are three BIAs off the West Coast of the continental United States with the potential to overlap portions of the PMSR. These include a designated blue whale feeding BIA from June to October, a humpback whale feeding BIA from April to November, and a gray whale migratory BIA from January to July and then from October to December. However, and as stated previously, neither strikes from projectiles nor underwater noise associated with cannon blasts and sonic booms are likely to impact these cetacean species and associated BIAs.

California Sea Lion

The California sea lion occurs in the eastern north Pacific from Puerto Vallarta, Mexico, through the Gulf of California and north along the west coast of North America to the Gulf of Alaska (Barlow *et al.,* 2008; DeLong *et al.,* 2017b; Jefferson *et al.,* 2008). Typically, during the summer, California sea lions congregate near rookery islands and specific open-water areas. The primary rookeries off the coast of the United States are on San Nicolas (SNI), San Miguel, Santa Barbara, and San Clemente Islands (Le Boeuf & Bonnell 1980; Lowry *et al.,* 1992; Carretta *et al.,* 2000; Lowry & Forney 2005; Lowry *et al.,* 2017). Haulout sites are also found on Anacapa Island, Richardson Rock, Santa Catalina Island, Santa Cruz Island, and Santa Rosa Island in the Southern California Bight (Le Boeuf 2002; Lowry *et al.,* 2017). In the nonbreeding season, beginning in late summer, adult and subadult males migrate northward along the coast of California to Washington and return south the following spring (Laake, 2017; Lowry & Forney, 2005). Females and juveniles also disperse somewhat but tend to stay in the Southern California area, although north and west of the Channel Islands (Lowry & Forney, 2005; Melin & DeLong, 2000; Thomas *et al.,* 2010).

California sea lions can also be found in California open ocean and coastal waters (Barlow *et al.,* 2008; Jefferson *et al.,* 2008). Animals are usually found in waters over the continental shelf and slope; however, they are also known to occupy locations far

offshore in deep, oceanic waters, such as Guadalupe Island and Alijos Rocks off Baja California (Jefferson *et al.,* 2008; Melin *et al.,* 2008; Urrutia & Dziendzielewski, 2012; Zavala-Gonzalez & Mellink, 2000). California sea lions are the most frequently sighted pinnipeds offshore of Southern California during the spring, and peak abundance is during the May through August breeding season (Green *et al.,* 1992; Keiper *et al.,* 2005; Lowry *et al.,* 2017).

California sea lions haul out at sites in the southern portion of VAFB, which are located more than 20 mi. (32 km) south of LF-05, outside the area that would be impacted by any proposed activities. They have not been observed at any northern VAFB haulout locations, except for rare individuals affected by domoic acid poisoning (U.S. Air Force 2020; Evans 2020). In 2019 a significant die-off of California sea lions, presumed to be caused by domoic acid toxicity associated with red tide algal blooms, was noted – this mortality event included most of Southern and Central California and included more than 80 deceased California sea lions observed on VAFB beaches (U.S. Air Force 2020; Evans 2020). There is no known successful breeding of this species on VAFB. Approximately 3.2 mi. (5.9 km) north of LF-05 and beyond the VAFB boundary but within the Project Area, California sea lions have been observed at Lion Rock during the three most recent aerial surveys (2013, 2016, 2017) performed by NMFS (National Marine Fisheries Service 2020b).

Steller Sea Lion

Steller sea lions range along the north Pacific from northern Japan to California (Perrin *et al.,* 2009), with centers of abundance and distribution in the Gulf of Alaska and Aleutian Islands (Muto *et al.,* 2020). There have also been reports of Steller sea lions in waters off Mexico as far south as the various islands off the port of Manzanillo in Colima, Mexico (Gallo-Reynoso *et al.,* 2020). The Eastern U.S. stock (or DPS) of Steller sea lion is defined as the population occurring east of 144°W longitude. The locations

and distribution of the Eastern population's breeding sites along the U.S. Pacific coast have shifted northward, with fewer breeding sites in Southern California and more sites established in Washington and Southeast Alaska (Pitcher *et al.,* 2007; Wiles 2015). San Miguel Island and Santa Rosa Island were, in the past, the southernmost rookeries and haulouts for the Steller sea lions, but their range contracted northward in the 20th century, and now Año Nuevo Island off central California is currently the southernmost rookery. Steller sea lions pups were known to be born at San Miguel Island up until 1981 (Pitcher *et al.,* 2007; National Marine Fisheries Service 2008; Muto *et al.,* 2020), and so, as the population continues to increase, it is anticipated that the Steller sea lions may re-establish a breeding colony on San Miguel Island in the future. In the Channel Islands and vicinity and despite the species' general absence from the area, a consistent but small number of Steller sea lions (one to two individuals at a time) have been sighted in recent years. Approximately one to two adult and subadult male Steller sea lions have been seen hauled out at San Miguel Island each year during the fall and winter over the last decade, and adult and subadult males have occasionally been seen on rocks north of Northwest Point at San Miguel Island during the part of the summer in the past few years (Delong 2019). In 2011, a vagrant Steller sea lion was observed hauled out at the Point Loma Space and Naval Warfare Systems Command facility in San Diego Bay, and a vagrant individual was observed in the water at the entrance channel during the monitoring of a pile driving project in 2015 (U.S. Department of the Navy 2015). Aerial surveys for pinnipeds in the Channel Islands from 2011 to 2015 encountered a single Steller sea lion at SNI in 2013 (Lowry *et al.,* 2017). Additional sightings have included a single male that was seen hauled out on an oil production structure off Long Beach during the winter of 2015 and 2016, a Steller observed in 2018 hauled out on a buoy outside Ventura Harbor, and a lone adult female who gave birth to and reared a pup on San Miguel Island in the summer of 2017 (Delong 2019).

In April and May 2012 Steller sea lions were observed at VAFB which was the first time this species had been reported at the Base over the past two decades. Since 2012, Steller sea lions have been observed occasionally in routine monthly surveys, with as many as 16 individuals recorded. In 2019, up to four Steller sea lions were observed on south VAFB during monthly marine mammal counts (U.S. Air Force 2020), and none have been observed during monthly counts in 2020 (U.S. Air Force In Prep.). Note that these locations are more than 20 mi. (32 km) south of LF-05 and are not within an area that would be impacted by any proposed activities. While flying to VAFB from Santa Maria for an unrelated project, contract biologists observed and photographed three Steller sea lions at Lion Rock in October 2017 (Ball 2017). This offshore rock haulout site is within an area exposed to in-air noise levels that may cause behavioral affects to pinnipeds at that haulout.

Harbor Seal

The harbor seal is one of the most widely distributed seals, found in nearly all temperate coastal waters of the northern hemisphere (Jefferson *et al.,* 2008). Harbor seals are generally not present in the deep waters of the open ocean. Harbor seals, while primarily aquatic, also use the coastal terrestrial environment, where they haul out of the water periodically. Harbor seals are a coastal species, rarely found more than 20 km from shore, and frequently occupying bays, estuaries, and inlets (Baird, 2001; Harvey & Goley, 2011; Jefferson *et al.,* 2014)

Ideal harbor seal habitat includes suitable haulout sites, shelter from high surf during the breeding periods, and sufficient food near haulout sites to sustain the population throughout the year. Haulout sites vary but include intertidal and subtidal rock outcrops, sandbars, sandy beaches, estuaries, and even peat banks in salt marshes (Burns, 2009; Gilbert & Guldager, 1998; Wilson, 1978). Harbor seals generally haul out in greatest numbers at low tides and during the afternoon, when it is usually warmest. The

period from late May to early June corresponds with the peak molt season when the maximum number of harbor seals are onshore (Lowry *et al.,* 2017).

Harbor seals use haulouts along the shoreline at VAFB. Most haulout sites on VAFB are located on south VAFB, more than 20 mi. (32 km) south of LF-05 and are not within an area that would be impacted by any proposed activities. On north VAFB, there are two haulout locations near LF-05: Lion's Head is 0.45 mi. (0.72 km) northwest and Little Sal is 2.15 mi. (3.45 km) northwest from LF-05. The Purisima Point haulout is 7.43 mi. (11.95 km) southwest of LF-05 and is located outside the area that would be impacted by any proposed activities. During monthly pinniped counts at haulouts during 2019, VAFB observed a maximum of 10 harbor seals at Little Sal and a maximum of 9 harbor seals at Lion's Head (U.S. Air Force 2020). As of November 2020, a maximum of six harbor seals have been observed at Little Sal, and a maximum of four harbor seals have been observed at Lion's head during the 2020 monthly counts (U.S. Air Force In Prep.).

Northern Elephant Seal

There are two distinct populations of northern elephant seals: one that breeds in Baja California, Mexico; and a population that breeds in California (Garcia-Aguilar *et al.,* 2018). The northern elephant seals in the ERCA II Project Area are from the California Breeding stock, although elephant seals from Baja Mexico frequently migrate through the ERCA II Project Area (Aurioles-Gamboa & Camacho-Rios 2007; Carretta *et al.,* 2017; Carretta *et al.,* 2020). Northern elephant seals spend little time nearshore and migrate four times a year as they travel to and from breeding/pupping and molting areas, spending more than 80 percent of their annual cycle at sea (Robinson *et al.,* 2012; Lowry *et al.,* 2014; Lowry *et al.,* 2017; Carretta *et al.,* 2020). Peak abundance in California is during the January–February breeding season and during the time when adults return to molt from April to July (Lowry *et al.,* 2014; Lowry *et al.,* 2017).

Although northern elephant seals haul out at south VAFB locations, they were not observed at north VAFB haul outs in 2019 (U.S. Air Force 2020) or in 2020 (U.S. Air Force In Prep.) Northern elephant seal occurrence on VAFB has become more frequent over the past decade (U.S. Air Force 2020) and northern elephant seals may begin to use areas where they have not previously been observed. Breeding has been observed on south VAFB since 2017 (Evans 2020).

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.,* 1995; Wartzok and Ketten, 1999). To reflect this, Southall *et al.,* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). A functional group for pinnipeds exposed to sounds out of water was established with a hearing range shown in Table 3. This is based on behavioral measurements of hearing for several pinniped species.

Table 3. Marine Mammal Functional Hearing Group for Pinnipeds (In Air) and its Generalized Hearing Range.

Hearing Group	Generalized Hearing Range*
Pinnipeds (in air)	75 Hz to 30 kHz

*Southall *et al.,* 2007.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The **Estimated**

Take section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the content of this section, the **Estimated Take** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Description of Sound Sources

This section contains a brief technical background on sound, the characteristics of certain sound types, and on metrics used in this proposal inasmuch as the information is relevant to the specified activity and to a discussion of the potential effects of the specified activity on marine mammals found later in this document. Sound travels in waves, the basic components of which are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz (Hz) or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly, except in certain cases in shallower water. Amplitude is the height of the sound pressure wave or the "loudness" of a sound and is typically described using the relative unit of the decibel (dB). A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure and is a logarithmic unit that accounts for large variations in amplitude; therefore, a relatively small change in dB corresponds to large changes in sound pressure. For airborne sound pressure, the reference amplitude is usually 20 μPa and is expressed as dB re 20 μPa. The source level (SL) represents the SPL referenced at a distance of 1 m from the source while the received level is the SPL at the listener's position.

Root mean square (rms) is the quadratic mean sound pressure over the duration of an impulse. Root mean square is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urick, 1983). Root mean square accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak pressures.

Sound exposure level (SEL; represented as dB re 1 µPa2-s) represents the total energy contained within a pulse and considers both intensity and duration of exposure. Peak sound pressure (also referred to as zero-to-peak sound pressure or 0-p) is the maximum instantaneous sound pressure measurable in the water at a specified distance from the source and is represented in the same units as the rms sound pressure. Another common metric is peak-to-peak sound pressure (pk-pk), which is the algebraic difference between the peak positive and peak negative sound pressures. Peak-to-peak pressure is typically approximately 6 dB higher than peak pressure (Southall *et al.,* 2007).

Sounds are often considered to fall into one of two general types: pulsed and non-pulsed (defined in the following). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.*, Ward, 1997 in Southall *et al.,* 2007). Please see Southall *et al.,* (2007) for an in-depth discussion of these concepts.

Pulsed sound sources (*e.g.*, cannon fire, sonic booms, explosions, gunshots, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986, 2005; Harris, 1998; NIOSH, 1998; ISO, 2003) and occur either as isolated events or repeated in some succession. Pulsed sounds are all characterized by a relatively rapid rise from ambient pressure to a

maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

Non-pulsed sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or non-continuous (ANSI, 1995; NIOSH, 1998). Some of these non-pulsed sounds can be transient signals of short duration but without the essential properties of pulses (*e.g.*, rapid rise time). Examples of non-pulsed sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems (such as those used by the U.S. Navy). The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment. There are no non-pulsed sounds associated with the ERCA II Project that could result in harassment of marine mammals.

The effects of sounds on marine mammals are dependent on several factors, including the species, size, and behavior (feeding, nursing, resting, etc.) of the animal; the intensity and duration of the sound; and the sound propagation properties of the environment. Impacts to marine species can result from physiological and behavioral responses to both the type and strength of the acoustic signature (Viada *et al.,* 2008). The type and severity of behavioral impacts are more difficult to define due to limited studies addressing the behavioral effects of sounds on marine mammals. Potential effects from impulsive sound sources can range in severity from effects such as behavioral disturbance or tactile perception to physical discomfort, slight injury of the internal organs and the auditory system, or mortality (Yelverton *et al.,* 1973).

Masking

Any man-made noise that is strong enough to be heard has the potential to reduce (mask) the ability of marine mammals to hear natural sounds at similar frequencies, including calls from conspecifics and environmental sounds such as surf noise. The

infrequent cannon fire and corresponding sonic booms, (77 events on 51 days over 2 calendar years) could cause masking, but it would be expected for no more than a very small fraction of the time during any single day. Occasional brief episodes of masking at VAFB would have no significant effects on the ability of pinnipeds to hear one another or to detect natural environmental sounds that may be relevant. Due to the expected sound levels of the activities proposed and the distance of the activity from marine mammal habitat, the effects of sounds from the proposed activities are unlikely to result in masking. Therefore, masking is not discussed further.

Temporary or Permanent Hearing Loss

Very strong sounds have the potential to cause temporary or permanent reduction in hearing sensitivity. Received sound levels must far exceed the animal's hearing threshold for there to be any temporary hearing impairment or temporary threshold shift (TTS). For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound. Received levels must be even higher for there to be risk of permanent hearing impairment, or permanent threshold shift (PTS). Although it is possible that some pinnipeds may incur TTS during cannon fire and sonic booms from ERCA II testing, hearing impairment has not been measured for pinniped species exposed to these combined sound sources. Auditory brainstem response *(i.e.*, hearing assessment using measurements of electrical responses of the brain) was used to demonstrate that harbor seals did not exhibit loss in hearing sensitivity following launches of large rockets with sonic booms at VAFB (Thorson *et al.,* 1999; Thorson *et al.,* 1998). However, the hearing tests did not begin until at least 45 minutes after the launch; therefore, harbor seals may have incurred TTS which was undetectable by the time testing was begun. There was no sign of PTS in any of the harbor seals tested (Thorson *et al.,* 1999; Thorson *et al.,* 1998).

In general, if any TTS were to occur to pinnipeds, it is expected to be mild and reversible. It is possible that some artillery fire as measured very close to the firing location may exceed the permanent threshold shift (PTS) criteria, but it is not expected that any pinnipeds would be close enough to the cannons to be exposed to sounds strong enough to cause PTS. Due to the expected sound levels of the activities proposed and the distance of the activity from marine mammal habitat, the effects of sounds from the proposed activities are unlikely to result in PTS and therefore, PTS is not discussed further.

Non-auditory physical or physiological effects

If noise-induced stress does occur in marine mammals, it is expected to occur primarily in those exposed to chronic or frequent noise. It is very unlikely that it would occur in animals, specifically California sea lions, Steller sea lions, harbor seals, and northern elephant seals, exposed to only a few very brief cannon fire and accompanying sonic booms over the course of 2 years. Due to the expected sound levels of the activities proposed and the distance of the activity from marine mammal habitat, the effects of sounds from the proposed activities are unlikely to result in non-auditory physical or physiological responses and are not discussed further in this section.

Disturbance Reactions

Cannon fire and sonic booms are characterized by sudden onset of sound, moderate to high peak sound levels, and short sound duration. Disturbance includes a variety of effects, including subtle changes in behavior, more conspicuous changes in activities, and displacement. Behavioral responses to sound are highly variable and context-specific and reactions, if any, depend on species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day, and many other factors (Richardson *et al.,* 1995; Southall *et al.,* 2007). Pinnipeds may be exposed to airborne sounds that have the potential to result in behavioral harassment, depending on

an animal's distance from the cannon fire and sonic booms. Sound could cause hauled out pinnipeds to exhibit changes in their normal behavior, such as temporarily abandoning their habitat. The onset of noise can result in temporary, short-term changes in an animal's typical behavior and/or avoidance of the affected area. These behavioral changes may include: reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior; avoidance of areas where sound sources are located; and/or flight responses (Richardson *et al.,* 1995).

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2003). Animals are most likely to habituate to sounds that are predictable and unvarying. The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure. Behavioral state may affect the type of response as well. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; NRC, 2003; Wartzok *et al.,* 2003).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could potentially be biologically significant if the change affects growth, survival, or reproduction. The onset of behavioral disturbance from anthropogenic sound depends on both external factors (characteristics of sound sources and their paths) and the specific characteristics of the receiving animals (hearing, motivation, experience, demography) and is difficult to predict (Southall *et al.,* 2007).

While there are no data on pinniped behavioral impacts associated with cannon fire and sonic booms, the results from studies at beaches exposed to acoustic disturbance

arising from missile launches and associated sonic booms at VAFB and SNI are highly variable (Holst et al. 2005, Ugoretz and Greene Jr. 2012). The DAF has also monitored pinniped responses to rocket launches at the Northern Channel Islands (NCI) during numerous launches over the past two decades. Monitoring data has consistently shown that reactions among pinnipeds to sonic booms vary between species, with harbor seals typically responding at the highest rates, followed by California sea lions, with northern elephant seals generally being much less responsive. Because Steller sea lions occur in the project area relatively infrequently, no data has been recorded on their reactions to sonic booms. Northern elephant seals generally exhibit no reaction at all, except perhaps a heads-up response or some stirring, especially if sea lions in the same area or mingled with the elephant seals react strongly to the boom. Post-launch monitoring generally reveals a return to normal patterns within minutes or up to an hour or two of each launch, regardless of species.

Responsiveness also varies with time of year and age class, with juvenile pinnipeds being more likely to react by leaving the haulout site. The probability and type of behavioral response will also depend on the season, the group composition of the pinnipeds, and the type of activity in which they are engaged. For example, in some cases, harbor seals have been found to be more responsive during the pupping/breeding season (Holst *et al.,* 2005a; Holst *et al.,* 2008) while in others, mothers and pups seem to react less to launches than lone individuals (Ugoretz and Greene Jr. 2012), and California sea lions seem to be consistently less responsive during the pupping season (Holst *et al.,* 2010; Holst *et al.,* 2005a; Holst *et al.,* 2008; Holst *et al.,* 2011; Holst *et al.,* 2005b; Ugoretz and Greene Jr. 2012). Though pup abandonment could theoretically result from these reactions, site-specific monitoring data indicate that pup abandonment is not likely to occur as a result of the specified activity because it has not been previously observed. While the reactions are variable, and can involve abrupt movements by some individuals,

biological impacts of these responses appear to be limited.

Anticipated Effects on Marine Mammal Habitat

Impacts on marine mammal habitat are part of the consideration in making a finding of negligible impact on the species and stocks of marine mammals. Habitat includes, but is not necessarily limited to, rookeries, mating grounds, feeding areas, and areas of similar significance. We do not anticipate that the proposed activities would result in any temporary or permanent effects on the habitats used by the marine mammals in the proposed area, including the food sources they use (*i.e.* fish and invertebrates) since underwater sound levels are low. These low underwater sound levels are not expected to cause any impacts to prey species, including physical injury, behavioral disturbance, or survivability. Therefore, it is not expected that the test activities would impact feeding success of pinnipeds.

While it is anticipated that the proposed activity may result in marine mammals avoiding certain haulout areas in close proximity to LF-05 due to temporary ensonification of out-of-water habitat, this impact to habitat is temporary and reversible and was considered in further detail earlier in this document, as behavioral modification. No impacts are anticipated to prey species and in-water habitat frequented by pinnipeds. The main impact associated with the proposed activity will be temporarily elevated in-air noise levels and the associated direct effects on marine mammals, previously discussed in this notice.

Debris projectiles or materials associated with firing the projectiles are not expected to impact beaches. The DAF would recover all debris found on land in the vicinity of pinniped haulout sites. Dense debris falling into the water farther offshore, including the projectiles, would sink quickly to the seafloor in deep waters and would not be recovered. Debris would be distributed within the predicted splash-down areas rather than concentrated in a single location, and it is unlikely that marine mammals would

encounter the debris in the water column or in the benthic environment. None of the debris, which is primarily composed of metal, would negatively affect benthic habitat.

Overall, the proposed test activities are not expected to cause significant impacts or have permanent, adverse effects on pinniped habitats or on their foraging habitats and prey.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform NMFS' negligible impact analysis and determination.

Harassment is the only type of take expected to result from these activities. For this military readiness activity, the MMPA defines "harassment" as (i) Any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) Any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where the behavioral patterns are abandoned or significantly altered (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to airborne sounds from cannon fire and sonic booms. Based on the nature of the activity, Level A harassment and Level B harassment in the form of TTS are neither anticipated nor proposed to be authorized.

As described previously, no mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be

behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. Generally, for in-air sounds, NMFS predicts that harbor seals exposed above received levels of 90 dB re 20 µPa (rms) will be behaviorally harassed, and other pinnipeds will be harassed when exposed above 100 dB re 20 µPa (rms). However, more recent data suggest that pinnipeds will be harassed when exposure is above 100 dB SEL (unweighted) (*Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III) Technical Report* (U.S. Department of the Navy, 2017)) as shown in Table 4. NMFS helped develop the Phase III criteria and previously used this threshold for the SNI, PMSR incidental harassment authorization (84 FR

28,462; June 19, 2019). Therefore, NMFS is using 100 dB re 20 µPa2s SEL (unweighted) here.

Table 4. Behavioral threshold for impulsive sound for pinnipeds.

Species	Level B harassment by behavior disturbance threshold
All pinniped species (in-air)	100 dB re 20 µPa2s SEL (unweighted)

Each time the ERCA II cannon is fired it would generate blast noise from the cannon firing and a nearly simultaneous sonic boom from the projectile as it travels along its flight path. The blast noise can be described as an overpressure, and would be highest in the immediate vicinity of the cannon and dissipate with distance from the LF-05 site. Peak sound pressure level (SPL) from the blast is predicted to reach 159 decibels related to 20 micropascals dB (re 20 µPa) on the beach due west of the LF-05 site (See Figure 6-1 in application). As the sound propagates farther offshore and away from the cannon, the peak SPL decreases, such that SPL would be less than 140 dB approximately 1 km west of the LF-05 site and less than 135 dB 2 km west of the site. The projectile generates a sonic boom, another high-energy impulsive sound or overpressure. The sound from the cannon fire and blast and the sonic boom would reach the beach nearly simultaneously, and the two sounds would be indistinguishable to pinnipeds on the beach or just offshore.

Table 5: TTS/PTS In-Air Thresholds for Pinnipeds In-air

Group	Impulsive			
	TTS Threshold SEL (weighted)	TTS Threshold Peak SPL (unweighted)	PTS Threshold SEL (weighted)	PTS Threshold Peak SPL (unweighted)
All other Pinnipeds	146	170	161	176
Harbor seals	123	155	138	161

Modeling predicts that the SPL from the sonic boom would reach 21 pounds per square foot (psf) (equivalent to 153.6 dB re 20 µPa) on the beach due west of the LF-05

site (Figure 6-2). Assuming that the sound from the two acoustic events, the blast from the cannon and the sonic boom from by the projectile, arrives on the beach at the same time, the sound experienced by a pinniped on the beach would be more intense than would be experienced from either source independently. Because SPLs are expressed in decibels, which is based on a logarithmic scale, the SPLs cannot simply be summed. Instead, the SPLs must first be converted from decibels to units of Pascals (Pa) before they are summed, and then the total SPL can be converted back to decibels for comparison with the marine mammal thresholds. The formula used to calculate the total SPL is dependent on the square of the SPLs divided by a reference pressure (e.g., 20 dB µPa), making the summation less intuitive. Using the equation below, where p_1 = 1,782.5 Pa (equivalent to 159 dB) and p_2 = 957.6 Pa (equivalent to 153.6 dB), the total SPL is 160.1 dB re 20 µPa.

$$Total\ SPL_{dB} = 10 * log_{10}\left(\left(\frac{p_1}{p_0}\right)^2 + \left(\frac{p_2}{p_0}\right)^2\right)$$

The in-air SPL generated by the combined cannon blast and sonic boom (160.1 dB re 20 µPa) is likely only to exceed the TTS threshold (155 dB re 20 µPa) shown in Table 5 onshore directly west of LF-05, between the site and the shoreline. The 155 dB re 20 µPa threshold only applies to harbor seals. The TTS threshold for all other pinnipeds is 170 dB re 20 µPa as shown in Table 5 which is well above calculated in-air sound levels. This area consists of approximately 0.15 km of rocky shoreline and 0.20 km of narrow sandy beach, with an approximate maximum of 150 feet of dry sand at low tides, comprising the northern tip of Minuteman Beach. Three pinniped species (California sea lion, northern elephant seal, and Pacific harbor seal) could potentially utilize this location. However, observations of live pinnipeds on Minuteman Beach are very infrequent and have been limited to only California sea lions, and appear coincident with elevated concentrations of domoic acid (red tide) in nearshore waters (Evans 2020). Harbor seals have never been observed at this location. Because of their rare occurrence

on Minuteman Beach and the lack of documented use of the coastal strand area between LF-05 and Minuteman Beach, it is very unlikely that any marine mammals, including harbor seals, would be present in that portion of the Project Area. In summary, and based on this analysis, TTS effects would be very unlikely for harbor seals and discountable for all other pinniped species. In addition, no PTS or other direct injury to pinnipeds is anticipated from in-air noise caused by ERCA II testing activities.

The nearest pinniped haulout from LF-05 is Lion's Head, which is approximately 0.5 km distant and is used by harbor seals. California sea lions could also use this location but have not been observed in the past 6 years of monthly counts performed by the DAF (U.S. Air Force 2020; Evans 2020). The maximum in-air SPL received at Lion's Head from the cannon blast is predicted to be 148 dB re 20µPa (See Figure 6-1 in application), and the SPL from the sonic boom is predicted to be 8.5 psf (146.2 dB re 20 µPa; Figure 6-2 in application). The combined SPL received on the beach at Lion's Head, assuming noise from both sources arrived simultaneously, would be 150.2 dB re 20 µPa (calculated as described in the previous section). This total SPL is less than the TTS threshold for all pinniped hearing groups.

Marine Mammal Occurrence and Take Estimation

To conservatively estimate the number of pinnipeds that would potentially be exposed to noise levels above the Level B harassment behavioral threshold during test events, the analysis considered the maximum number of pinnipeds observed at haulouts within the predicted 100 dB re 20 μPa^2sec or greater SEL. The furthest haulout within this area is Lion Rock, predicted to receive an SEL of 130 dB re 20 μPa^2sec, which exceeds the 100 dB re 20 μPa^2sec threshold for behavioral reactions (Figure 6-3 in application). Therefore, pinnipeds observed at the Lion Rock haulout were included to estimate the numbers of pinnipeds exposed during each test event day. During the WSD test event, the cannon will be fired multiple times per day. Because the analysis assumes

all hauled-out pinnipeds would react to the initial noise by either an alert reaction, reorienting their position on land, or leaving the haulout and returning to the water, multiple cannon blasts in succession would result in only one take for each individual on a given day. A total of 35 tests would occur during the WSD test event which uses only Projectile A. Ten tests would occur during the weeks 1 and 2 and the remaining 25 tests would occur over the course of 13 test days during weeks 3 through 5. For the PPM test event one Projectile A and one Projectile B would be fired on each of 3 days during a 2-week period. Similarly, for each of the Boost Demo, Capture Test, and Final Demo test events, one Projectile A and one Projectile C would be fired on each of 6 test days over a 2-week period. Over the entire testing period (from calendar year 2023 through 2025) there would be a total of 51 days when test events would produce in-air noise at levels that could potentially result in take of pinnipeds by Level B harassment.

Estimated take of California sea lions by Level B harassment was calculated by taking the highest number of individuals (n=883) observed on a single day during the three most recent aerial surveys (2013, 2016, 2017) of Lion Rock multiplied by the number of days (39 for year 1 and 12 for year 2) over which each test event would occur. Surveys were performed by NMFS (NMFS 2020b). The total number of exposures to in-air noise from the proposed testing would result in an estimated 34,437 takes by Level B harassment during Year 1 and 10,596 takes by Level B harassment during Year 2 (Table 6, Table 7). Therefore the DAF requested, and NMFS proposes to authorize, this amount of Level B harassment by behavioral disruption for the Year 1 and Year 2 IHAs, respectively.

The DAF estimated take by Level B harassment by assuming that the number of Steller sea lions (n=3) observed once at Lion Rock in October 2017 could occur during each day of testing. The total number of exposures to in-air noise from the proposed testing would result in an estimated 117 takes by Level B harassment in Year 1 and 36

takes by Level B harassment in Year 2. The DAF requested and NMFS proposes to authorize 117 takes during Year 1 and 36 takes during Year 2 by Level B harassment from behavioral disruption, as shown in Table 6 and Table 7.

Take of harbor seals was calculated by taking the highest number observed hauled out at Little Sal (n=10) and Lion's Head (n=9) during monthly counts in 2019 and 2020 (U.S. Air Force 2020, In Prep.), resulting in a total of 19 harbor seals for each test event. This resulted in an estimate of 741 takes in Year 1 and 228 takes in Year 2 by Level B harassment. Therefore, the DAF requested and NMFS proposes to authorize 741 takes during Year 1 and 228 takes during Year 2 by Level B harassment from behavioral disruption (Table 6, Table 7).

Northern elephant seals have not been observed hauled out at any locations within the project area in which Level B harassment could occur. However, overall numbers have been increasing on VAFB over the past decade (U.S. Air Force 2020), and it is possible that northern elephant seals may begin to occupy areas where they have not previously been observed. The DAF, therefore, conservatively assumed that one northern elephant seal may be exposed to in-air noise resulting in behavioral disturbance during each test event. Therefore, NMFS proposes to authorize 39 takes during Year 1 and 12 takes during Year 2 by Level B harassment from behavioral disruption (Table 6, Table 7).

Table 6—Estimated Takes by Level B Harassment by Test Event and Test Schedule

Test Dates	IHA Year 1 (4QCY23 - 2QCY24)			IHA Year 2 (1QCY25 - 2QCY25)	
Test Event	WSD	PPM	Boost Demo	Capture Test	Final Demo
California sea lion	26,490	2,649	5,298	5,298	5,298
Steller sea lion	90	9	18	18	18
Harbor seal	570	57	114	114	114
Northern elephant seal	30	3	6	6	6
All	27,180	2,718	5,436	5,436	5,436

Table 7—Level B Harassment Take Estimates by Year

Species	Estimated Number of Level B Harassment Events	Estimated Number of Level B Harassment Events

	Year 1	Year 2
California Sea lion	34,437	10,596
Steller sea lion	117	36
Harbor seal	741	228
Northern elephant seal	39	12

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)). The NDAA for FY 2004 amended the MMPA as it relates to military readiness activities and the incidental take authorization process such that "least practicable impact" shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse

impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned) and the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The DAF must employ PSOs at established monitoring locations as described in the **Proposed Monitoring and Reporting** section. PSOs must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions.

The DAF, when practicable, would perform ERCA II test activities when tides are greater than 1.0 foot (0.3 m). This is when haulouts tend to be unoccupied by pinnipeds and would reduce the number of exposures.

To prevent unauthorized take of marine mammals, test activities must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such

taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

Visual Monitoring and Recording

Protected Species Observers (PSOs) would commence monitoring at Lion's Head, Little Sal, northern end of Minuteman Beach (beach between Minuteman Beach parking area and LF-05), and Lion Rock at least 72 hours prior to ERCA II test events and continue until at least 48 hours after each event. PSO's would be stationed at locations offering the best possible view of individual haulout sites. During each daily monitoring effort, surveys (counts with binoculars and spotting scopes, if necessary) would be conducted hourly for 6 hours (6 counts per day) centered around the late morning or afternoon low tides as much as possible. Monitors will record species; number of animals hauled out; general behavior; presence of pups; age class; and gender. Environmental conditions will also be monitored including tide, wind speed, air temperature, and swell.

PSOs cannot be present to survey Little Sal and Lion's Head when live cannon fire is underway for safety purposes, therefore, video recording of pinnipeds would be conducted during live fire testing in order to record any reaction to the blast noise and sonic boom. Lion Rock is approximately 0.25 mi (0.4 km) from the closest observation location and only half of the offshore rock is visible from land so it may be monitored via drone rather than traditional survey methods (spotting scopes and binoculars). The DAF would prefer to use a drone so that the entire rock can be observed. However, if DAF is unable to secure necessary permits, protected species observers (PSOs) would use a spotting scope to observe reactions during test events as an alternative.

Reporting

Technical reports will be submitted to the NMFS' Office of Protected Resources within 90 days from the date that each IHA expires. This report will provide full documentation of methods, results, and interpretation pertaining to ERCA II testing activities covered under these proposed IHAs.

The DAF will submit reports that include:

- Summary of test activities (dates and times);

- Summary of mitigation and monitoring measures implemented;
- Number, species, and any other relevant information regarding marine mammals observed and estimated exposed/taken during activities;
- Description of the observed behaviors (in both presence and absence of test activities);
- Environmental conditions when observations were made including visibility, air temperature, clouds, wind speed and direction, tides, and swell height and direction; and
- Assessment of the implementation and effectiveness of mitigation and monitoring measures.

If a dead or seriously injured pinniped is found during post-firing monitoring, the incident must be reported to the NMFS Office of Protected Resources and NMFS West Coast Regional Stranding Coordinator immediately. In the unanticipated event that any cases of pinniped mortality are judged to result from ERCA II testing activities at any time during the period covered by these IHAs, this will be reported to NMFS and the West Coast Stranding Coordinator. The report must include the following information:

1. Time and date of the incident;
2. Description of the incident;
3. Environmental conditions (*e.g.,* wind speed and direction, cloud cover, and visibility);
4. Description of all marine mammal observations and active sound source use in the 24 hours preceding the incident;
5. Species identification or description of the animal(s) involved;
6. Fate of the animal(s); and
7. Photographs or video footage of the animal(s).

Testing activities must not resume until NMFS is able to review the circumstances of the prohibited take. If it is determined that the unauthorized take was caused by ERCA II activities, NMFS will work with the Holder to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The DAF may not resume their activities until notified by NMFS.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analyses applies to all the species listed in Table 6, given that the anticipated effects of this activity on these different marine mammal species are expected to be similar. Activities associated with the proposed

activities, as outlined previously, have the potential to disturb or displace marine mammals.

The specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from airborne sounds associated with ERCA II cannon fire and accompanying sonic booms. Based on the best available information, including monitoring reports from similar activities (*i.e.* missile launches and sonic booms) at VAFB and nearby launch facilities, behavioral responses will likely be limited to reactions such as alerting to the noise, with some animals possibly moving toward or entering the water, depending on the species and the intensity of the cannon fire and sonic booms. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in TTS or PTS. Thresholds for PTS are higher than modeled sound levels across the entirety of the Project Area, and thresholds would not be exceeded or significantly disrupt foraging behavior. Thus, even repeated instances of Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in fitness to those individuals, and thus would not result in any adverse impact to the stock as a whole.

If a marine mammal responds to a stimulus by changing its behavior (*e.g.,* through relatively minor changes in locomotion direction/speed), the response may or may not constitute taking at the individual level, and is unlikely to affect the stock or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on animals or on the stock or species could potentially be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart, 2007). Flushing of pinnipeds into the water has the potential to result in mother-pup separation, or could result in a stampede, either of which could potentially result in serious injury or mortality. However, even in the instances of pinnipeds being behaviorally disturbed by cannon fire and associated sonic booms at VAFB and nearby

launch facilities no evidence has been presented of abnormal behavior, injuries or mortalities, or pup abandonment as a result of sonic booms. These findings came as a result of more than two decades of surveys at VAFB. Post missile-launch monitoring generally reveals a return to normal behavioral patterns within minutes up to an hour or two of each launch, regardless of species (SAIC 2012). Therefore, in-air sound associated with canon firing and associated sonic booms is not expected to impact reproductive rates or population levels of affected species.

We do not anticipate that the proposed activities would result in any temporary or permanent effects on the habitats used by the marine mammals in the proposed area, including the food sources they use (*i.e.* fish and invertebrates) since underwater sound levels would not affect prey species.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- No impacts to cetaceans are anticipated;
- No impacts in the form of TTS or PTS are expected or authorized;
- The anticipated incidences of Level B harassment are expected to consist of, at worst, temporary modifications in behavior (*i.e.,* short distance movements and occasional flushing into the water), which are not expected to adversely affect the fitness of any individuals or populations;
- The proposed activities are expected to result in no long-term changes in the use by pinnipeds of haulouts in the project area, based on over 20 years of monitoring data;
- No impacts to marine mammal habitat/prey are expected; and

- The expected efficacy of planned mitigation measures in reducing the effects of the specified activity to the level of least practicable adverse impact.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that for both the Year 1 IHA and the Year 2 IHA the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Proposed Authorizations

As a result of these preliminary determinations, NMFS proposes to issue two distinct and consecutive one-year IHAs to the Department of the Air Force for

conducting Extended Range Cannon Artillery II testing at Vandenberg Air Force Base, California from October 1, 2023 to September 30, 2024 (Year 1) and from October 1, 2024 to September 30, 2025 (Year 2) provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. Drafts of the proposed IHAs can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

Request for Public Comments

We request comment on our analyses, the proposed authorizations, and any other aspect of this notice of proposed IHAs for the proposed ERCA II testing. We also request at this time comment on the potential renewal of these proposed IHAs as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for these IHAs or subsequent Renewal IHAs.

On a case-by-case basis, NMFS may issue a one-time, 1 year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the **Description of Proposed Activities** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activities** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

(1) A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).

(2) The request for renewal must include the following:

- An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).
- A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

(3) Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: January 3, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2022-00032 Filed: 1/5/2022 8:45 am; Publication Date: 1/6/2022]